Agricultural Resources and Environmental Indicators, 2000.

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Abstract

This report identifies trends in land, water, and commercial input use, reports on the condition of natural resources used in the agricultural sector, and describes and assesses public policies that affect conservation and environmental quality in agriculture. Combining data and information, this report examines the complex connections among farming practices, conservation, and the environment, which are increasingly important components in U.S. agriculture and farm policy. The report also examines the economic factors that affect resource use and, when data permit, estimates the costs and benefits (to farmers, consumers, and the government) of conservation and environmental programs and policies. The report takes stock of how natural resources (land and water) and commercial inputs (energy, nutrients, pesticides, and machinery) are used in the agricultural sector; shows how they contribute to environmental quality; and links use and quality to technological change, production practices, and farm and environmental programs.

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Preface

This 2000 electronic edition of *Agricultural Resources and Environmental Indicators (AREI)* updates information provided in the first two hard-copy editions published in July 1997 and December 1994, and expands coverage to include more detailed data and analysis on biological resources, livestock and manure management, farm business management, agricultural productivity, sustainable resources use, and global climate change. The decision to switch to an electronic-first publication format was necessitated both by the more rapid pace of information demands from our customers, and the very real exigencies of coordinating such a massive data and information compilation. We are confident that the electronic format and serialized printing of chapters will provide the most timely updates since chapters can be revised as new data become available, rather than on an overall publication schedule.

As in previous editions, *AREI* takes stock of how natural resources (land and water) and commercial inputs (energy, nutrients, pesticides, and machinery) are used in the agricultural sector; shows how they contribute to environmental quality; and links use and quality to technological change, production management practices, and farm programs. Our objective remains to provide a comprehensive source of data and analysis on the factors that affect resource use and quality in American agriculture, and information on the costs and benefits of improving the quality of the Nation's resources. Most resource indicators are devoid of economic content: they are primarily physical measures. But indicators can also be constructed and used to help identify cost-effective solutions to solving resource-related problems and to help answer questions about whether we are using natural resources efficiently. For example, water quality indicators may point to a reduction in polluting chemicals in a lake or stream, but it is also important to know the costs associated with achieving such reductions and the value of the benefits provided by the cleaner water. By focusing on the economic dimension of environmental indicator*s, AREI* fills a unique niche in the indicators literature. *AREI* focuses on examining the complex economic links between agricultural activity and environmental performance and on assessing the costs and benefits associated with changes in resource quality.

Like the first two editions, *AREI 2000* begins with the two major agricultural resources, land and water, and adds a new section on biological resources. We examine both the quantity and quality of land, water, and biological resources, the factors that affect their use, and the values (market and nonmarket) associated with each. The subsequent chapters examine commercial inputs used in agricultural production with a special emphasis on how input use affects the quality of land, water, and wildlife habitat. We focus on describing the factors that affect the adoption of these practices and examine how these practices can use commercial inputs more efficiently and result in less damage to water and land resources. These chapters are followed with an overview of agricultural productivity and agricultural research, which focuses on how new technologies are developed, what public policies encourage development and adoption, and how technological change is an important factor in increasing agricultural productivity while meeting conservation goals. The next set of chapters is devoted to conservation and environmental programs with a particular emphasis on water quality programs, the Conservation Reserve Program, Conservation Compliance, and wetlands programs. Our goal is not only to describe the programs but to examine the associated costs and benefits to farmers, taxpayers, and consumers. The final chapters examine global resource use in light of world-wide food demands and climate change. To facilitate the use of *AREI 2000*, we have provided an appendix that describes the agricultural resource surveys and data used throughout. Most chapters also contain a listing of related recent ERS reports. *AREI 2000* is also accessible on the ERS homepage at http://www.ers.usda.gov under *Briefing Room*s listed as *Resource Indicators*.

Agency Acronyms Used in These Chapters

ACE-- U.S. Army Corps of Engineers
CRS-- Congressional Research Service
EPA-- U.S. Environmental Protection Agency
GAO-- U.S. General Accounting Office
OMB-- U.S. Office of Management and Budget
USDA-- U.S. Department of Agriculture
APHIS-- Animal and Plant Health Inspection Service
ARS-- Agricultural Research Service
CSREES-- Cooperative State Research, Education, and Extension Service
ERS-- Economic Research Service
FSA-- Farm Service Agency. Consolidates former Agricultural Stabilization and Conservation Service (ASCS), and Farmers Home Administration (FmHA)
FS-- Forest Service
NASS-- National Agricultural Statistics Service
NRCS-- Natural Resources Conservation Service. Formerly Soil Conservation Service (SCS)
OBPA-- Office of Budget and Program Analysis
OGC-- Office of General Counsel
USDC-- U.S. Department of Commerce
ITA-- International Trade Administration
USDI-- U.S. Department of the Interior
BLM-- Bureau of Land Management
BOR-- Bureau of Reclamation
FWS-- Fish and Wildlife Service
OPA-- Office of Policy Analysis
USGS-- U.S. Geological Survey

This handbook was prepared by the Economic Research Service (ERS), the economic and social science research agency of the U.S. Department of Agriculture. ERS's mission is to provide economic and other social science information and analysis for public and private decisions on agriculture, food, natural resources, and rural America.